

The Age of Asymmetric Space Warfare

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On 19 February 1957, at the inauguration of the Air Force Office of Scientific Research Astronautics Symposium in San Diego, General Bernard A. Schriever emphasized America's dire need for space superiority.¹ On that day, this space pioneer shared his vision of space as an opportunity, one we now call the ultimate high ground. Opportunity, however, is an indiscriminate concept. Eight months later the Soviet Union launched Sputnik, the world's first artificial satellite.² General Schriever sensed the coming race to master the new battlefield of space—and the United States had already been beaten out of the starting gates.

50 years later, the status of US space supremacy is in stark contrast to its beginning. With many active satellites in various orbits, the US military operates more space platforms than any other country's combined sum of civil/military satellites. With missions ranging from weather and communications to imaging and missile defense, there is no rational case to be made against the US having achieved the goal of space superiority set by General Schriever. Although it is a revered position atop the champion's pedestal, it also warrants meticulous examination from potential competition.

This notion came to stark relief on 11 January 2007, when China successfully tested an anti-satellite (ASAT) weapon on one of its own satellites.³ Suddenly, space assets which had operated without credible threats for years suddenly had become potential targets. This test did more than demonstrate the ability of a foreign power to destroy on-orbit systems; it may have very well ended the golden age of undisputed space supremacy that America has enjoyed since the Cold War, demanding change to current doctrine and revealing a critical vulnerability in the realm of asymmetric space warfare.

Sun Tzu's quote (below) reveals a very simple, yet important lesson. The US has developed a certain sense of inevitable complacency over its unchallenged superiority to date in space. The comfort with our current posture is a product of many influences, but one is particularly significant. Consider our only credible enemy in the history of space warfare, the former Soviet Union. Early on, the USSR sought to win the space race, intending to attain the ultimate high ground and use it as a force multiplier to accomplish its regional and global objectives. Both the US and USSR researched and tested ASAT capabilities to thwart the other, but soon abandoned the programs due to cost and an important strategic fact: if satellites are blown into numerous pieces, they then become a hazard for all other satellites in nearby orbits. The kinetic ASAT is a discriminate killer; the debris it creates is not. Thus in the Cold War, space was determined to be too valuable of an asset to be rendered useless to all parties by cluttering it with harmful satellite remnants. The US evolved and adapted to these unspoken rules of space warfare. America had won the last competition in space after a very rocky start and spent several unchallenged years building further dominance. How, then, could any new threat even begin to challenge?

Space adds significant value to our nation's defense by allowing seamless integration of the joint application of force projected *globally* on any adversary. This global reach defines not only a space capability, but a wartime philosophy. No other military has the capability to take a fight and deliver combat effects anywhere in the world as quickly and effectively as the US. Space bolsters this capability by allowing the warfighter to master unfamiliar terrain, to coordinate attacks down to the second, to gather valuable intelligence, to put bombs within inches of a target, and much more. In a sense, it maximizes efficiency allowing a relatively small force to inflict an awesome amount of damage in a very short time.

Although highly valuable to military applications, space is also important for commercial use. The commercially driven global telecommunications industry alone earned an estimated \$1.21 trillion in revenue in 2005. By 2010, US investment in space is expected to be \$500 - \$600 billion—approximately equal to all current US investments in Europe.⁴ The global positioning system (GPS) provides all weather targeting capability, but also provides timing that allows automatic teller machines to work. Imaging satellites scout enemy positions, but also survey hurricane damage allowing relief efforts to be concentrated accordingly. Weather satellites project forecasts for both air strikes and weekend vacations. Television, communications, and global commerce in general—all depend on space. Whether analyzed from a commercial or military perspective, space is a cornerstone on which modern day living in this country depends.

With such an invaluable role for commercial and military application, why isn't everyone occupying the ultimate high ground? At present, space is an elite club with a cover fee that only few nations can afford. In a battlefield without borders, naturally limited access based on cost and technical complexity, then, is a defense of its own. With only a few nations with the financial and technical prowess to put a system on orbit, space is, at least for now, naturally fortified. Furthermore, once on station, destroying an enemy's satellite is potentially a death sentence for friendly satellites in nearby orbits. These two facts have been the general concept of defense in this arena for years, but no longer appear to hold true.

As previously mentioned, China successfully tested an ASAT in January. True to our space heritage, the first reaction from many was the possibility of another space race. This event, however, spurs a much deeper concern. Although space is a tremendous asset to our nation in both a military and commercial sense, it has also become a tremendous source of dependence. With China's demonstration of ASAT capability, the new question is one of motivation: how could any nation use a kinetic ASAT when the risk of damaging friendly systems is so high? The answer is simple: our competition today is not like the competition of the past.

In today's battlefield, we are witnessing a new type of warfare with suicide and roadside bombings. The enemy has discovered how valuable a single life is to the US, whether it is an American soldier or an innocent Iraqi civilian. Although valuing life is a moral foundation in our minds, it is an exposed vulnerability in theirs. In fact, our current adversaries are so adamant about exploiting this vulnerability, they do not hesitate to strap explosives to themselves and run into crowded areas. With every detonation, the body count grows and the public's support for the war declines. Case and point, this illustrates a textbook approach to finding a vulnerability and exploiting it. As radical as the method of exploitation is, its effectiveness is unquestionable.

Now, transition that mindset to space. With previous adversaries, the objective was to win the space race and solidify control of the ultimate high ground. Today, this is not necessarily the case. In the past, no one really had a strong enough foothold to exploit space as universally as the US does

today. With space still in contention, there was still hope for an adversary to win the race. Eventually, this hope dwindled as the US and its allies cemented their presence on orbit. So what does the modern adversary do when confronted with a hopeless battle on conventional terms? They employ radical ideas and tactics to pull the fight to asymmetric conditions.

Just as these tactics are put to deadly use in Iraq, they can be put to use in space with even greater impact. Imagine numerous ASATs lifting off every day out of the Middle East, progressively striking satellites in numerous orbits. Whether a friendly or hostile target, the debris these strikes create impacts other satellites in nearby orbits, perpetuating the destruction. Even if another satellite were on the pad ready to launch, sending it to such an orbit would assuredly mean joining the numerous rings of orbiting space junk. Suddenly, the ability for the US to wage war on foreign soil would be severely mired. No longer could we use space as the ultimate high ground, for it would have turned into the ultimate graveyard. The effects on the US economy would be catastrophic as well, considering the implications of a trillion dollar industry crashing in only a few months. To continue the earlier analogy, if space were an elite club with limited access, today's adversaries would rather bomb it than try to gain admission. With so much US dependence on space based systems, what would the world be like if one day it were suddenly denied as a feasible area of operations?

As irrational of an idea as this is, space doctrine must start to account for the possibility of "kamikaze" tactics. When put into perspective, the only real defense for space today is philosophical; if everyone uses it for peaceful purposes, everyone reaps the benefits; therefore, no one is irrational enough to clutter orbit with indiscriminate ASAT debris. But when an adversary suddenly gets the idea that they don't want to *use* space, but simply *deny* it to everyone as an asset, the landscape of modern warfare changes dramatically. This shift in doctrine to cover asymmetric space warfare could come in many forms, and as space professionals of the future, it is imperative for us to consider what tomorrow may bring. What to do about this threat, however, is a question in dire need of debate and action within our community.

Will a laser based system that disables satellites be the future? Or will it be old-fashioned debris clouds created by kinetic ASATs that shape tomorrow's battlefield? In either case, space is no longer an arena of the elite and can be influenced by any nation willing to buy proven ASAT technology. China has already proven it to be affordable and functional. Furthermore, adversaries of the present are in stark contrast to those of the past, openly willing to pursue radical tactics without regard for collateral damage. The notion of mutual peaceful operations on orbit is very rapidly becoming void. With all of the complicated technological advancements of tomorrow, a single kinetic ASAT and its impact cannot be ignored. Defense against new and radical on-orbit tactics requires immediate integration into current doctrine to maintain US space supremacy of the present and future. Space professionals of today must continue to apply General Schriever's vision to tomorrow, but must also adapt to the coming age of asymmetric space warfare.

Notes:

¹ Air Force Link, "Gen Schriever's Visionary Space Speech Turns 50," 21 February 2007, special staff report, 50th Space Wing Public Affairs, <http://www.af.mil/news/story.asp?id=123040817> (accessed 1 July 2007).

² NASA, "Sputnik and The Dawn of the Space Age," 12 April 2007, <http://history.nasa.gov/sputnik/>.

³ Stephanie C. Lieggi, "Space Arms Race: China's ASAT Test a Wake-up Call," Center for Nonproliferation Studies, 24 January 2007, <http://cns.miis.edu/pubs/week/070124.htm>.

⁴ Michael Krepon, "Lost in Space: The Misguided Drive Toward Antisatellite Weapons," *Foreign Policy* 80, no. 3 (May/June 2001): 2-8, <http://www.spacedebate.org/evidence/1515/>.

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After graduating in 2005, Lieutenant Smith began as the assistant director of operations for the 2005 Nellis Air Show with the 57th OSS, Nellis AFB, Nevada, before being sent to UPT at Moody AFB, Georgia. Lieutenant Smith has several awards including the Air Force Achievement Medal and German Armed Forces Efficiency Badge.